

UNIT 5

THE NATURAL ENVIRONMENT AND RESOURCES

BASIC NEEDS AND THE ENVIRONMENT

- ◆ What is Environment?
- ◆ It is defined as the sum total of the external surrounding conditions of an organism
- ◆ It offers the natural resource base of production and consumption; that is land, soil, water, atmosphere, flora and fauna species.
- ◆ The ecosystem is part of the environment and this refers to part of the physical environment and related biological communities as they interact with each other in a complex web of relationship.

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- ◆ **Women and the Environment.**
- ◆ There has been a significant increase in the awareness of the specific role women play in promoting social and economic development.
- ◆ Women have always contributed significantly to primary environmental care through their extensive knowledge and skills in managing the environment

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- ◆ In sub-saharan africa for example, women account for more than 80% of agricultural production, 50% of animal husbandry, 90% of food processing and 60% of marketing.
- ◆ This means that access to and control over natural resources are critical for women.
- ◆ Other factors that affect women in thier environmental management are:

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- Their decision making power
- Access to appropriate training technologies
- Their development options (education and work) and
- Micro-macro linkages on policy level
- ◆ Many past development efforts have not only ignored women's need, skills and knowledge, but also accelerated environmental degradation.
- ◆ This has resulted in over-burdening of women

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- ◆ Due to environmental degradation, some women may spend more hours fetching water, firewood and food, leaving them little time to concentrate on their development opportunities.
- ◆ Also as women bear this increasing burden, their health situation is adversely affected.

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- ◆ However, women have developed thier own strategy for dealing with the environmental degradation.
- ◆ Their first strategy is often to put more time, energy and effort into the supply of natural resources.
- ◆ They also make judicious use of resources or look for alternatives such as using cow dung as manure and crop residue instead of fire wood.

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- ◆ Women also organize themselves into pressure groups and networks to prevent further degradation on the environment.
- ◆ They often initiate certain activities including waste disposal and recycling, soil conservation and intercropping.

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- ◆ Development organizations need to modify development and environmental conservation processes and strategies, to encourage women participation and better reflection of their efforts
- ◆ On this note, initiatives that could have a negative impact on the environment and women, should be avoided.

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- ◆ NGOs and other development organisations can devise strategies that could minimize the impact of environmental degradation on women.
- ◆ This can be achieved through the provision of credit for income-generating activities, education and training facilities for women.

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- ◆ **Children and the environment:**
- ◆ Children are seen as the next generation to inherit the earth and all the resources in it.
- ◆ However, they have little say in the management of our resources.
- ◆ Current environmental degradation can limit children's future potential social and economic development

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- ◆ Appropriate environmental management could improve the living conditions the family, lower infant mortality rate and the incidence of other child killer diseases.
- ◆ Investment in environmental awareness and education programmes should be promoted among children.

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- ◆ **The workplace and the Environment:**
- ◆ One of the duties of every employer is to provide a safe working environment for his workers.
- ◆ Besides, workers health can affect the success of the company by reducing productivity.
- ◆ In one way, the impact of the environment on workers health, such as cost of drugs, treatment by a doctor etc can be valued

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- ◆ However, psychological stress, discomfort and anxiety experienced by workers exposed to unsafe environmental conditions is a social cost which is difficult to quantify.
- ◆ Government's participation in the ILO and UNCTAD, UNEP and other international organisations has promoted policies and conventions to protect workers' health.

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- ◆ Other policies such as the production, handling and transportation and storage of harmful substances, is aimed at ensuring workers safety at the workplace.

Energy resources and the environment

- ◆ **Different manifestation of energy.**
- ◆ Energy has been defined as the capacity to do work.
- ◆ Work can mean any manifestation of energy in time and space.
- ◆ The focus however will be on useful work, though the importance of destructive work of forces of nature is recognised as resistance

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- ◆ **Functional appraisal of energy kinds:**
- ◆ Energy may also be appraised with regards to the functional differences with regards to the different energy forms.
- ◆ For example the energy that may be required for locomotive engines may differ from that required for work.
- ◆ In the same way, gasoline may be more suitable for driving automobiles than to use firewood.

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- ◆ Basically, energy forms may be categorized into two:
- ◆ Animate
- ◆ Inanimate

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Types of energy	manifestation	comment
Animate	Those functioning in and through living organisms	Two forms: a)Muscular energy applied by animals to do useful work b) Biotic energy associated with life and growth
Inanimate	Those derived from non-living matter especially-fossil fuels and falling water	

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Potential energy	Snow at high altitudes or water falling from steep slopes	May be destructive
Electrical or chemical energy	Hydro/mechanical	It is a characterless concept such as time and space Energy transformations
Elementary energy	Sunlight, which the green leaf through photosynthesis makes available to the growing plants as carbon and carbon compound.	Elementary energy furnishes the starting point of long row of derivatives that modern production process tend to lengthen
Derived energy	The chemical energy stored up in the sugar or starch of living plants. The carbon of coal and petroleum	

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- ◆ **Human energy:**
- ◆ Though Man occupies a unique place in the realm of energy, he (man) is completely outclassed by animals and especially by power-driven machines.
- ◆ Indeed, man's gift is brain, not brawn.
- ◆ Man uses his brain power to direct, invent, inspire, motivate and plan
- ◆ There is no substitute for this type of energy

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- ◆ **Sources of energy:**
- ◆ As indicated by Eugene Ayres, all energy is of atomic origin.
- ◆ To Ayres, our converted energy now comes from the sun where the transmutation of hydrogen to helium is believed to provide energy in the form of light with minor supplements of thermal and ultraviolet radiation.
- ◆ All our power is from this source except for the relatively tiny amounts that come from radioactive transformation on the earth itself

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- ◆ **Uses of energy sources:**
- ◆ Until recently, little use has been made of sunlight as a source of mechanical energy.
- ◆ From all indications, however, there will be increase usage of this inexhaustible source of energy.
- ◆ The extraction of gasoline and alcohol from vegetation is uneconomical, but will probably play a role in future energy sources.
- ◆ By far the most important source of energy in terms of mechanical work performed are the non renewable fossil fuels; coal, oil and natural gas

Population, Agriculture and Env. Nexus in Sub-Saharan Africa

◆ Introduction:

- ◆ Sub-Saharan Africa's demographic, agriculture and environmental problems are closely linked in a mutual association reinforcing causality of chain.
- ◆ In other words, increasing population led to the quest for increase in food production and other resource utilization to satisfy the increasing wants of man
- ◆ All these activities of man is the major contributing factor to the serious environmental degradation occurring on the continent

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- ◆ Three basic concerns:
- ◆ *Population growth:*
- ◆ *Agriculture performance*
- ◆ *Environmental degradation*

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- ◆ **Shifting cultivation and Pastoralism:**
- ◆ Shifting or long fallow cultivation and transhumans pastoralism (seasonal migration of livestock to suitable grazing grounds) have been appropriate under conditions of slow population growth, abundant land, limited capital and limited technical knowledge.
- ◆ But in most sub-saharan Africa, the scope for further expansion of crop land has drastically narrowed.
- ◆ Slow technical innovation because of ineffective agriculture research and extension systems, poor transportation, inappropriate agricultural marketing and pricing etc.

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- ◆ **Women's time, role in rural production and household maintenance systems:**
- ◆ Most women in Sub-Saharan Africa bear heavy responsibilities for food crop production, weeding and harvesting on men's field, post-harvest processing, fuel wood and water provision, and household maintenance.
- ◆ This burden on rural women keeps increasing as population growth outpaces agricultural production and growing numbers of men leave their farm to seek industrial and urban jobs.

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- ◆ **Land and tree tenure system:**
- ◆ Traditional tenure system in Sub- Saharan Africa, with communal land ownership, provided considerable tenurial security on land farmed by community members.
- ◆ As long as population increased only slowly, customary systems were able to accommodate the emerging need to move towards de facto permanence of land rights assignation.

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- ◆ Most government and development agencies have, however, mistakenly believed that customary tenure system provided in adequate tenurial security and not conducive to the introduction of modern agricultural technology and market oriented agriculture.
- ◆ Many governments have responded by nationalizing the ownership of land, and then allowing customary rules to guide the use of some lands, while allocating other land to private investors and public projects.

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- ◆ **Forest and woodland exploitation:**
- ◆ The heavy dependence on wood for fuel and building materials have combined with the ever increasing population to contribute to the growing forest and woodland degradation.
- ◆ This destruction has led to soil degradation and erosion, eliminates wildlife habitat, leads to soil biodiversity and has severe implications for local and regional climates and hydrological regimes.
- ◆ This in turn affects agricultural production

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- ◆ **An action plan:**

- ◆ Several policies have been in place to curb the menace but failed. It is necessary however to keep trying than never: below are some action plans:

- ◆ **Some basic targets:**

- ◆ Agricultural production should grow at about 4 percent per annum.
- ◆ The share of the population that is food insecure must be reduced from 25 percent to 10, 5 percent then to zero by 2020.
- ◆ The rate of deforestation needs to be slowed

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- ◆ There should be reduction in population growth from the present annual average annual rate of over 3.1 percent to 2.3 percent per annum.
- ◆ **Reducing fertility rates:**
- ◆ There should be increase in demand for fewer children.
- ◆ This can be achieved through public education on the benefits of having fewer children.
- ◆ Women's work load need to be eased to reduce the need for more children.

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- ◆ **Promoting environmentally sustainable agriculture:**
- ◆ Farm productivity per unit area should be increased significantly to generate more output with little increase in the area farmed.
- ◆ Agriculture research and extension services need to focus less on mono-crop technologies and farm mechanization and much more on the types of technologies mentioned, adapting them to local conditions and making them available to farmers for adoption.

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- ◆ Intensive and resource conserving agriculture must be made less risky and more profitable.
- ◆ This requires appropriate marketing, price, tax and exchange rates policies as well as investment in rural infrastructure, health and education facilities.
- ◆ Creation of parks, reserves and community owned range land and protecting these against conversion into crop land will help conserve natural resources.
- ◆ Also, reducing infrastructure developments in forests and other fragile areas will discourage settlement in these areas.

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- ◆ **Easing women's time constraints and improving their productivity:**
- ◆ Initiatives in research, extension, infrastructure development, rural technology and education are needed to ease women's time constraint and improve their productivity.
- ◆ This can be achieved through initiatives of NGOs and other agencies for the benefit of women.
- ◆ Examples include developing time saving and efficient stoves, providing improved farming and crop processing techniques and tools for women etc.

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- ◆ **Clarifying resource ownership:**
- ◆ Immediate action is needed in eliminating open access to resource ownerships and to provide legal protection to traditional and private lands owners.
- ◆ Women need equal rights to land and tenurial; security as men, especially in view of the increasing number of heads of households in many rural areas.

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- ◆ **Addressing the fuel wood problem:**
- ◆ Efforts to promote agro-forestry need to be promoted because it has a significant impact on the agro-ecological environment, rural energy economy and women's time.
- ◆ Therefore open access sources of fuel wood should be eliminated, cutting in protected areas stopped.
- ◆ There should be a great need for fuel efficient stoves, which will not put much pressure on the natural resources.

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- ◆ **Infrastructure development and settlement policy:**
- ◆ There should be heavy investment in rural infrastructure, health and transport facilities.
- ◆ Infrastructural facilities have a great impact on rural productivity.
- ◆ Better and healthier farmers are more productive and more likely to be innovators.

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- ◆ **Natural resource management and environmental protection:**
- ◆ Establishing conservation areas and protecting forests is conducive to promoting agricultural growth, because they protect watersheds and stabilize local and regional climate and hydrological systems.
- ◆ Land use plans should identify areas to be protected, areas to be farmed, areas to be used for sustainable logging etc.
- ◆ The local community should be involved in the design and implementation of such policies.

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- ◆ **Water:**
- ◆ There is an urgent need for effective hydrological planning and for prudent demand management.
- ◆ Water must be recognised as the critical and limiting resource which must be carefully allocated and protected against pollution.
- ◆ Since water resources are frequently shared among countries, it is important to corporate closely in planning for long term water sharing.

Environmental Degradation in Africa

- ◆ **What is environmental degradation?**
- ◆ Degradation denotes a reduction in the capability of land to satisfy a particular use.
- ◆ Apart from decreased food production, degradation can also result in droughts, ecological imbalance and consequent degradation of the quality of life.
- ◆ In Africa, the most obvious symptom of land degradation on food production is the increased poverty levels and declining yields.

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- ◆ **The role of man in the degradation process:**
- ◆ Any interference by human in the natural process of soil formation, evolution and erosion has effect on these processes often unforeseen.
- ◆ Though some (e.g erosion, leaching, compaction etc.) happen naturally in the absence of any human intervention, human interference has sometimes modified and usually accelerated all these processes, and has created the conditions under which new sets of processes previously absent or insignificant came into play.

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- ◆ Human induced degradation occurs when the land is poorly managed or where natural forces are so powerful that there is no means of management that can check its progress.
- ◆ Some degradation occurs when land that has never been interfered with is brought into active use (for example marginal lands and fragile ecosystems).

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- ◆ **Some practical activates that lead to environmental degradation:**
- ◆ Poorly managed crop farming
- ◆ When livestock exceed the lands carrying capacity
- ◆ Wood fuel extraction
- ◆ Bush fires
- ◆ Mining and industrial activities
- ◆ Quarrying

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- ◆ **Combating Environmental Degradation:**
- ◆ Changing our lifestyle; environmental friendly
- ◆ The excessive demand on natural resources especially for fuel can be reduced by introducing other energy sources for fuel purpose.
- ◆ Better agricultural practices must be encouraged
- ◆ Waste disposal and excessive pollution of the atmosphere should be checked
- ◆ Sand winning practices must be prohibited.

The Concept of Natural Resource Management

- ◆ **Meaning of management:**
- ◆ The process of getting things done through people which involves planning, organizing, directing and controlling;
- ◆ Taking responsibility for the efficient use of resources to achieve the set objectives effectively
- ◆ A manager should also perform the ff roles:
- ◆ Interpersonal, informational and decision roles.

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- ◆ **What is Natural Resource management?**
- ◆ It is the conscious process of decision making whereby natural and cultural resources are allocated over time and space to optimise the attainment of stated objectives of a society, within the framework of its technology, political and social institutions, and legal and administrative arrangements.
- ◆ It is therefore a multi-disciplinary area of study which uses the management principles indicated earlier for its stated objectives.

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- ◆ **Resource management can also be described as** “ a process or system of decision making whereby resource use, conservation or environmental policies and practices are devised and implemented”
- ◆ Such decisions are usually concerned with exploitation and allocation of resources over space and time, investment in renewable resources to enhance their flows, protection of the environmental resources and ensuring development and well being of humans.

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- ◆ **Cultural and Natural Resources:**
- ◆ Experiences of our culture allows us to give meanings and values to objects, and to the past, present and future.
- ◆ As noted in the earlier units, what may be a resource to one particular ethnic group may be different from what a different group of people may perceive it.
- ◆ Culture influence the way we think about natural resources, how it should be used, and so on.

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- ◆ There are many competing cultural views of how best lands can be put to good use.
- ◆ These include not only the beliefs and practices of various ethnic groups, but also the beliefs and practices of various government agencies.
- ◆ Since resources are cultural appraisals, it is important that the users and beneficiaries are involved in the management process of particular resources.
- ◆ Because any management decision which excludes resource users is bound to fail.

Environmental Management

- ◆ **Population growth:**
- ◆ Population distribution and size are closely associated with the quality of the environment, since humans need to make use of natural resources in order to survive.
- ◆ Large populations require large amounts of basic supplies such as food, water, housing, energy and land.
- ◆ If the demand for these resources is not balanced with the sustainable supply, the environment can be seriously damaged and degraded

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- ◆ The quality of the environment affects conditions of the population.
- ◆ Poor environmental conditions often push people to have more children.
- ◆ Poor environmental quality often leads to increased mortality and morbidity.
- ◆ The fertility of a woman may also depend on the quality of dietary intake, and health conditions.

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- ◆ Thus Demographic and environmental policies should not be considered in isolation.
- ◆ Environmental policies must consider the environmental and socio-economic characteristics of the population in order to protect the environment.
- ◆ Sustainable management of population also requires strategies in which the socio-economic factors that affect population densities and distribution are examined

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- ◆ **The urban environment:**
- ◆ Because of the massive rural-urban migration, it is important to focus attention directly on managing the urban living environment.
- ◆ The cities are absorbing about two-thirds of our population, at the same time depleting large quantities of our natural resources and generating more waste than they can handle.
- ◆ A typical example is the case of ACCRA.

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- ◆ Coping with environmental degradation will require policies and activities that emphasize:
 - ➔ Adopting environmentally sound waste disposal practices
 - ➔ Improving the efficiency of waste collection and transport system
 - ➔ Extending waste collection services to low income areas, using affordable approaches
 - ➔ Protecting the quality of air and water
 - ➔ Promoting energy efficiency and fuel alternatives etc.

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- ➔ Shifting to more simple and economical forms of transport
- ➔ Institutionalizing the planning, budgeting and accounting processes of waste collection systems
- ➔ Hiring, training and motivating staff to provide affective and efficient service
- ➔ Facilitating the participation of the private sector

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- ◆ **The industrial sector:**
- ◆ It is the interest of industry to protect, conserve and manage the environment.
- ◆ Appropriate environmental management practice in this sector will entail a total approach in which all the processes of manufacturing a product till it gets to the final consumer are taken into account instead of concentrating mainly on controlling emissions and effluents at the last stage.
- ◆ Production of environmentally friendly products should be encouraged.

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- ◆ **Education, information and the environment:**
- ◆ Environmental education begins with education itself by encouraging personal hygiene in our homes, workplaces and wherever we find ourselves.
- ◆ Environmental literacy is an important part of effective, functional literacy and contributes to the development of national awareness of the importance of the environment in economic, social and cultural development.

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- ◆ **Community participation:**
- ◆ Community participation in environmental protection and resource management activities is significantly important and has succeeded because:
 - ➔ People want to protect the place they live and manage their resources sustainably
 - ➔ People who live in the community have better knowledge of their local environment than do planners or their local reps. etc

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- ◆ **Preparation of resource management plans:**
- ◆ Nationwide plans have been developed for natural resource conservation and environmental protection at all levels of the country.
- ◆ However, both their implementation and impact have been lower than expected.
- ◆ This raises the question of whether such plans are too ambitious, inappropriate or have overlooked some critical assumptions.

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- ◆ Usually, implementation of resource management plans is assumed to be the responsibility of the government, and given that little benefit has accrued to government over the years, it is not surprising that implementation of such plans have suffered in the past.
- ◆ There is therefore the need to identify some innovative ways of relieving African governments of some of the responsibilities of financing the implementation of resource management plans.

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